

ANALOGIES DEVELOPED FROM METHODS OF TEACHING
REPRODUCTION

by 149

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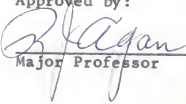
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I. INTRODUCTION

In the mid 1960's, it was the observation and the opinion of the writer that a considerable amount of divided emphasis was being placed upon sex education in society. He further observed that the issues of whether sex education should be taught at home, in the church, in the school, or not at all was being critically debated, and at what age sex education should start, if at all, was a controversial subject.

In the article "Sex Education," Ralph G. Eckert gave a commentary about adolescents.

For better or worse, children are influenced most by the knowledge and attitudes of their parents and brothers and sisters. But all persons who work with children and adolescents are transmitting their knowledge and feelings about masculine and feminine roles and behavior. Many persons, because of their own attitudes or fears, are unconsciously teaching children that the sexual aspects of life are different somehow from the other aspects of life about which they may freely seek information and receive it. It would seem desirable, then, for all who work with children and adolescents to be able to help them gain healthy attitudes towards the sexual aspects of personality and human relations.¹

As an instructor of vocational agriculture, it was an observation of the writer that the vocational agriculture instructors of the high schools had been teaching sex

¹Ralph G. Eckert, "Sex Education," The Encyclopedia of Mental Health (New York: A Division of Franklin Watts, Inc., 1963), Vol. V, p. 1843.

education for many years. This assumption was based upon the belief that as agricultural instructors teach about livestock reproduction, they seldom consider the possibility of transfer of learning and its various implications to the student's personal life.

Robert S. Ellis has stated the following concerning the teaching for transfer:

A very large part, certainly, of the work we do in the schools is done for the purpose of improving adjustments to life situations. It is to be hoped that the arithmetic learned in the school will carry over to the calculation of automobile mileage on a proposed trip or to the management of a family bank account. If this transfer does not take place, the teaching has been largely ineffective.²

The following statement about transfer of training was written in the Encyclopedia Americana by Frank N. Freeman.

. . . This is the question of whether learning to do one thing improves one's ability to do other things or whether improvement is confined to the particular thing which is learned. The question is complicated, and no simple answer can be given. It seems safe to say, however, that in every case of learning there are some specific and some general elements, and that only by analyzing each case can it be determined what these elements are and what their importance is.³

²Robert S. Ellis, Educational Psychology (New York: D. Van Nostrand Company, Inc., 1931), p. 137.

³Frank N. Freeman, "Psychology of Learning," Encyclopedia Americana (New York: Americana Corporation, 1966), XVII, 148-9.

Statement of the Problem

From the aforementioned observations and beliefs, a problem area was set forth by the writer as one which he felt was worthy of investigation. The problem was stated in the form of two questions. (1) Does transfer of learning from the teaching of livestock reproduction information hinder or positively enhance the student's knowledge of human sex? (2) Does the inclusion of human sex education information in the lessons concerning livestock reproduction provide a more beneficial result in student understanding of reproduction?

Purpose of This Study

This study was designed to indicate what changes were brought about in a student's concepts about human reproduction when he was taught a series of lessons on livestock reproduction as compared to changes in a student's concepts about human reproduction when he was taught a series of lessons on livestock reproduction which included information concerning human reproduction. It was also the purpose of the study to indicate to vocational agriculture instructors the nature of the need related to the teaching of reproduction to high school students. A third purpose of the study was to find out if the inclusion of human reproduction information would overcome any false analogies that the student might develop from the study of livestock reproduction.

Limitations of This Study

The results of this study were limited to the responses which could be obtained from nine high school sophomore boys studying vocational agriculture at Frankfort High School and nine high school sophomore boys studying vocational agriculture at Silver Lake High School. Both schools were located in northeast Kansas.

An interview was conducted by the investigator of approximately ten instructors of vocational agriculture to determine how many would be interested in taking part in the study. Seven of the instructors said they would be interested in participating in the study, but would first have to examine the questionnaire to be given to the students. Upon seeing the questionnaire, three instructors said that they felt that their communities would object to the study being conducted in their schools. Four instructors took the questionnaire to their administrators and after explaining it to them, two were refused permission to participate in the study. Out of approximately ten vocational agriculture instructors contacted, one was available to participate in the study along with the investigator, who was granted permission by the Superintendent of Schools to conduct the study at Silver Lake High School.

Definitions of Terms Used

Several terms were set aside for special definition for purposes of this study. The definitions given below may or may not be those of common usage but are defined by the writer as they apply to this study.

Animal life reproduction. A series of lessons, taught on livestock reproduction with the inclusion of information about human sex education, organized by the writer.

False analogy. An assumption that is not correct but which was drawn about the relationship of two or more symbols, objects, ideas, etc. that have partial resemblance.

"French Kissing." The definition of this term, as used in this study, was to mean the interplay of the tongues while kissing mouth to mouth.

Sex education. The best definition that the investigator of this study found, in his opinion, was written by Ralph G. Eckert. The definition for sex education, which is used in this study, was taken from Eckert.

The process of human reproduction including most importantly the transmission of feelings about their own sex and the opposite sex, and the way in which love affects the relationship. It also includes aid in understanding sexual responses in both sexes and help in developing guides to behavior that is most likely to produce healthy personalities.

It is an almost continuous process of nonverbal as well as verbal communication, at both the conscious and the unconscious levels.⁴

Review of Selected Literature

A survey was made by the investigator for literature related to the central theme of this study at the Kansas State University Library, the Topeka Public Library, and his own personal library. No literature was found which related directly to this study of how livestock reproduction information influences the student in his boy-girl relationship. However, recent literature about sex education was selected for a review as background for the design of this study.

In recognizing reproduction as being a complex topic, and sex being the most influential single factor, Richard Hey stated:

The most influential single fact about a person is sex. In most people's lives, sex limits the choice of clothing, the kind of toys and play, and even the person's name. A baby's sex influences the way he or she is welcomed into a family. Later it determines the choice of a career. As such, there is growing realization that sexuality is a fundamental dimension of the total personality throughout life. The term, 'sexuality,' is used to refer to this more inclusive concept in contrast to the term 'sex' which, in its current usage, tends to be limited to genital contact.

This older, more limited, concept focuses on sex as an act--namely intercourse--and on the consequences of the act--conception and birth. In reality, sex has a much broader meaning. It describes

⁴Eckert, op. cit., p. 1842.

who a person is--that is, how a person is a man or a woman. The manner in which men and women get along with each other is what human sex is all about. Sex education is just one aspect of education for family living.⁵

Another aspect of sex education was written in the pamphlet Sex and Our Society.

In an economy of abundance that relies on constantly increasing consumption, the old virtues of hard work, self-denial and saving for the future seem less valid. Daily pressure to buy on impulse and have fun--'Why wait? Buy now, pay later'--encourages self-indulgence. And a myriad stimuli prompt indulgence in sexual pleasures.

. . . Our culture insidiously presents it as a stolen sweet, a commercial asset, fun, a weapon, a status symbol, a cure for loneliness and, above all, the crowning expression of romantic love. But our culture still officially labels it sin--outside the bonds of matrimony.

Adults as well as youth are snared in the contradiction. Since so many adults violate the traditional code, it is not surprising that their lip service to it does not persuade the young. On the contrary, adolescents see social authority as two-faced and consequently are apt to flout its rules.⁶

This brought forth two questions about sex education to the writer: (1) Is no sex education harmful? (2) Is sex education, per se, harmful to the students?

In writing about the first question, Helen Marie Starr included the following paragraph:

⁵Richard N. Hey, "It's Sex!," Minnesota Journal of Education, 47:17, December, 1966.

⁶Lester A. Kirkendall and Elizabeth Ogg, Sex and Our Society (New York: Public Affairs Committee, Inc., 1964, 1966), pp. 8-9.

However, a negative program might well be a result of neglecting to offer sound education in this area. It could be said that the 'No' group by giving sex education such a superficial brush-off, may be innocently contributing to a sex education program that is negative, inaccurate, and destructive. The absence of a proper school program will not prevent young people from learning about sex. If instruction is not available from the proper sources--the home, the school, the church, community health and welfare agencies working as a team--young people will turn to dangerous, inadequate sources--mass media, misguided poorly informed peers, and unethical adults--that, for obvious reasons, are only too glad to have this opportunity. In addition, young people are constantly being exposed to a world full of immature adults who demonstrate in their daily lives open violation of accepted moral and ethical codes of behavior.⁷

The following was taken from an article by Lee Brotherton, in which he made a comment about the practice of not providing sex education.

We need to realize that in our effort to protect children from sex by with-holding knowledge about it, we deny them the opportunity to come to us for help when it is desperately needed. What young person can ask a respected adult for help when he has learned from years of experience that the subject he must discuss is strictly taboo?⁸

Another observed negative influence on the student was the commercialization of sex as written in the pamphlet Sex and Our Society.

⁷Helen Marie Starr, "If You Have Students, You Have Sex Education," Minnesota Journal of Education, 47:19, December, 1966.

⁸Lee Brotherton, "Fight Sex With Sex," Minnesota Journal of Education, 47:26, December, 1966.

Since sex sells, the publishing, entertainment, and advertising industries will hardly change their blatant and distorted presentation of sex of their own accord. But a public alert to the fallacy in suggestions that sex on any terms is glamorous and rewarding could resist them to some extent. And good sex education that presented in no uncertain terms the differences between healthy and unhealthy sexual development would point up the false values of commercial media, and so help to insulate youth against them.⁹

In writing about the second question and its validity, Dr. Milton I. Levine wrote that "there is no evidence whatsoever that sex education is harmful, that it excites curiosity or stimulates sex urges and desires."¹⁰ Ralph G. Eckert, in his article "Sex Education," stated:

It is assumed that most resistance comes from people who fear that what is learned will include knowledge they feel to be harmful to their children. Probably most of all, they feel that knowledge and talk about sex will stimulate sexual desire and lead to sexual experimentation. Or, they may feel that sex education may include knowledge about such things as contraception, which may be contradictory to their religious beliefs or which might encourage sexual promiscuity.

.

Experimental programs in Oregon and Wisconsin convinced many educators and public health workers that intensive sex education programs in those states led to significant reductions in illegitimate births, venereal disease, and juvenile sex crimes. I know of no research that points in the opposite direction. The continuation of the

⁹Kirkendall and Ogg, op. cit., p. 26.

¹⁰Milton I. Levine, "Sex Education in the Public Elementary and High School Curriculum," The Journal of School Health, 37:31, January, 1967.

comprehensive San Diego program for more than a decade shows that a sound program can develop and continue to deserve strong public support.¹¹

The physician, Dr. Levine, stated that parents should be the ones to teach sex education. Various writers had opinions which they expressed about the subject of the parental responsibility to teach sex education.

Levine stated:

Ideally, sex education should come from the home but this has been found grossly inadequate, for most parents shy away from the subject due to their own upbringing and inhibitions. Some parents know the answers but do not have the words for an adequate explanation, some are told that their questions are not nice and should not be asked, or they are put off and told they are too young or that they will be answered later. Often they are given untruths. Unfortunately no organized effort has been made by the church or any other group to educate large numbers of parents so that they can correctly answer these questions of children. And so the children, in the majority of instances, obtain their sex knowledge, usually distorted, from playmates and other children whom they chance to meet.¹²

F. R. Wake wrote:

A final finding, perhaps the most vivid of all to me, emerged at the end of every discussion period. Patiently waiting to speak to me privately were a number of people, roughly 5 per cent of the audience. With dignity and desperation these parents asked what they were to do. They believed in sex education, but because of their upbringing they could not, no matter how they tried, bring themselves to talk of sex to their children. They spoke of this problem

¹¹Eckert, op. cit., pp. 1846-7.

¹²Levine, op. cit., p. 31.

with shame and guilt but with love of their children in their hearts.

Many parents haven't the opportunity at the time (even though we may say they had better take the time) to provide themselves with this information. They feel, too, that they lack a technical vocabulary and are at a loss for satisfactory substitute words.

Finally, as noted earlier, there are parents who cannot easily communicate their thoughts about sex. Some have learned emotional attitudes in their childhood that are hard to change. They want to be unembarrassed in talking with their children, but the set is too firm to be broken. . . . Often they couldn't break through this feeling of shock to engage in a temperate discussion of sex. Even when they could break through to some extent, they were really scared to death that the children would move from the general question to personal ones involving their parents' own sex relations. These are the questions that some parents recoil from and are afraid they'll be called on to answer.

For many parents, therefore, the best role is not the communication of facts about sex but the communication of attitudes about these facts. They may not be their children's best sex educators, yet parents must 'get across' to a child an awareness of the significance of sex as a force that plays an important role in the well-integrated personality.¹³

Additional comments were found in the article "Sex Education - 1966 Version."

. . . We believe there are three additional reasons why sex education beyond the period of late childhood can be done more naturally and effectively outside the home.

¹³F. R. Wake, "Are Parents the Best Sex Educators," The PTA Magazine, 61:8-10, November, 1966.

First, the emotional ties between parents and youth hamper effective learning about sex in the home.

.....

Second, the young adolescent is engaged with a struggle to find his own identity and to establish independence from his family. . . . In the family setting sex is an intensely private thing--something to be shielded from the queries and probings of others. The fact that his family supports a school sex education program and permits him to get the more personal parts of it there assures the adolescent that his need for privacy is respected.

.....

Third, youth need the opportunity to internalize knowledge related to their own sexuality through discussion with their peers. . . . Youth share sexual information extensively, but the bulk of it is confused or unreliable. There are also tabooed topics which most adults fail to realize. Many subjects are too touchy to be discussed at all, or are handled only jokingly even between very close friends. A group, as in a class directed by an understanding adult, offers a protected atmosphere in which youth can seriously discuss and grapple with these subjects.¹⁴

A statement about the gap between adults and youth was taken from the pamphlet Sex and Our Society as follows:

Both teen-age boys and girls rate 'petting' and 'sex' as more difficult to discuss with parents than any other of thirty-six topics, according to one study. According to another, adults don't even support the sexual conduct of which they approve. For example, virgin boys complain that, while their age mates put them on the defensive about their chastity, their elders give them no encouragement in maintaining it.

As a rule, adults have no idea what pattern of sexual conduct their sons and daughters are

¹⁴Lester A. Kirkendall and Deryck Calderwood, "Sex Education - 1966 Version," Illinois Education, 55:72-3, October, 1966.

following unless something goes wrong. That they react with shock, blind to the fact that the basic failure is their own--a reflection of our social confusion.¹⁵

Rhoda L. Lorand wrote of another cause of the communication gap between parents and their teenagers.

Another cause of oversensitivity is that the teenager swings back and forth between feeling entirely able to be independent, and then becoming anxious and feeling that perhaps after all it would be safer to remain a child for just a little longer. The adult who approaches the teenager can never be sure in advance at just what point in the pendulum swing he is catching the youngster. Tact, kindness and respect for the youngster's ideas and feelings are important qualities a parent needs in order to get along with teenagers. He also needs a rhinoceros hide to be able to withstand his adolescent's periodic need to prove his parents' ideas and preferences are stupid.

The parent or educator who understands what to expect of the teenager does not become as easily offended nor feel as painfully rejected by the youngster and is therefore better able to maintain a friendly attitude. Those who feel threatened and hurt by the youngsters either fight back or withdraw in aggrieved silence; in either case adding to the guilt and confusion of the teenager.¹⁶

Some of the writing reviewed indicated that parents' attitudes are transferred to their teenagers. The following article was taken from the book Love, Sex and the Teenager.

Naturally what worries teenagers the most is sexual behavior. What is right, wrong, dangerous, safe, normal, abnormal? Using the standards of the home as a starting point, they must evolve their

¹⁵Kirkendall and Ogg, op. cit., p. 5.

¹⁶Rhoda L. Lorand, Love, Sex and the Teenager (New York: The Macmillan Company, 1965), p. 187.

own if they are to be truly mature individuals some day. Their behavior must be dictated not by blind fear, which is childlike, but by knowledge, logic, reason, and consideration for the well-being of others as well as of themselves. In many cases one finds overanxious parents very disturbed at the thought of even the smallest intimacies; one finds the other extreme too, where parents make the serious mistake of approaching their teenagers with the offer of contraceptive devices. The overanxious parents are beaming unspoken alarm messages to their children, 'Sex is bad and dangerous, we don't want you to be involved.' The ultra-modern are in effect saying, 'There's nothing specially important about it, c'mon along and be one of us.' There is a large in-between group of parents who, feeling uncomfortable and uncertain as to what their attitude should be, ignore the entire matter, uneasily hoping for the best. Then there is a small group of lucky parents who, feeling comfortable and happy about their own sexuality and respecting the place of sexuality in the lives of their children, communicate to the child by their whole attitude and an occasional discreet twinkle in the eyes, that love, sex and romance are great and one of life's most wonderful and important experiences, deserving to be treated with due regard for all of its important aspects. These parents are able to allow their children a proper amount of freedom and privacy, trusting to their judgment and good sense, knowing that any kind of detailed discussion of date abhavior and sex is an invasion of privacy and an embarrassment to the youngster.¹⁷

The pamphlet Sex and Our Society also contained information about the attitudes parents may give to their teenage children.

Still, even liberated parents sometimes betray anxiety in talking of sex with their children, who then sense something 'bad' about it. With teen-agers, the problem becomes even more difficult. At this age youngsters insist on thinking their own thoughts and going their own way without parents 'butting in'; it is part of their striving for independence. In

¹⁷Ibid., pp. 189-90.

many cases, the parents' wisest course is to accept the fact that an outside person may be better able to help their son or daughter in this phase, and to see that such a helper is available.

To this end, adolescents should have full, frank answers to all their questions about sex. As we give them freedom, we must also give them knowledge, so that they can use their freedom intelligently and responsibly. To say that this will push them into sex is to ignore reality. They are pushed into sex already, and some of the most damaging consequences are due to half-truths youth have been handed, or to sheer ignorance. An example of this is the pregnant teen-ager who had learned only that such things didn't happen to girls of a good family like herself!¹⁸

Lois Bear found in her studies of the Winfield, Kansas community that 75 per cent of the parents would attend an adult education course to improve their ability to impart sex education to their youngsters if it were offered at a convenient time.¹⁹

At Olivia, Aldus D. Lofthus noted of the adult education course that:

Fears about acceptance soon proved to be unfounded. One hundred-sixty parents and other interested individuals registered for the program, and attendance held up consistently for the entire six weeks.²⁰

¹⁸Kirkendall and Ogg, op. cit., p. 22.

¹⁹Lois Oskins Bear, Attitudes of Parents Toward Certain Aspects of Family Life Education in a Kansas High School (Kansas State College Master's Report, 1955), p. 24.

²⁰Aldus D. Lofthus, "Collective Effort Helps Launch Community Program," Minnesota Journal of Education, 47:23, December, 1966.

In the leaflet What Parents Should Know About Sex in the Schools, the question concerning the school and parent relationship was discussed.

Traditionally, sex education has been a function of the home or of the church. Is it now a proper function of the school?

Yes, because all the evidence shows that most children are not receiving adequate sex education at home, in church, or elsewhere. They get bits and pieces of information on reproduction here and there, but little that could truly be termed sex education. The schools can provide a body of accurate knowledge about sex that most parents seem unable or unwilling to give their children.²¹

One aspect of community backing of a sex education program was reported from Glen Cove, New York.

School system initiative didn't start the sex teaching. Frustrated mothers and fathers asked for it, and now the entire community appears to support the project with enthusiasm.

Says Dr. Albert R. Brinkman, Glen Cove school superintendent: 'I've seen many a parent review our program and then say, "I wish I'd had something like this when I was young."' ²²

Robert J. Hoffman reported the teachers' views of sex education in the schools. "Professional educators indicated by a majority of responses that in their opinion schools should include sex education in the curriculum."²³

²¹John Cooper, What Parents Should Know About Sex Education in the Schools (Washington, D.C.: National Education Association).

²²John G. Rogers, "Sex Education Begins in Kindergarten," Parade, January 8, 1967, p. 6.

²³Robert J. Hoffman, "The Teacher's View," Minnesota Journal of Education, 47:27, December, 1966.

Ralph G. Eckert gave these comments of the parent-teacher associations. "Close cooperation with the leaders of the school parent-teacher association is recommended; their endorsement of the program helps to reassure other parents of its soundness."²⁴

Most of those concerned with sex education thought that attitude should be the main factor stressed.

Mary S. Calderone wrote of the sex education program in Washington state:

The persons who attended Mrs. Buck's meeting were aware that the schools were already giving the young people in their community reliable information on the facts of reproduction. They felt, however, that what the children needed most was teaching about attitudes toward sex.²⁵

In Parade, John G. Rogers made statements about a sex educator, Mrs. Daniels. "She attempts to present a rounded education based on her observation: 'Sex is something you are, not something you do.'²⁶

In a section concerning sex attitudes of a health text, authors wrote as follows:

A healthy attitude toward sex does not mean that all rules are out. It means that you learn to understand the significance of sex in everyday life--

²⁴Eckert, op. cit., p. 1846.

²⁵Mary S. Calderone, "Planning for Sex Education," NEA Journal, 56:27, January, 1967.

²⁶Rogers, op. cit., p. 7.

to see it in perspective. Overemphasis on sex is no healthier than trying to hide it in some dark corner of your mind.

.

But the sustained physical intimacy between a man and a woman, which is so important in marriage, is essentially a closed book for young people. This new and crucial factor is, unfortunately, the one for which they have been least prepared by other relationships and observations.²⁷

Ralph G. Eckert had this to write about sex attitudes.

"Most sex educators, I believe, feel that we shall have happier marriages when there is less emphasis on sex before marriage, and more emphasis upon sex in marriage.²⁸

In the article "Sex Education - 1966 Version," a statement about decision making was written.

. . . Young people now do not scare easily. They weigh and evaluate facts and circumstances, and then decide. So one of the objectives of sex education has to be responsible decision-making.²⁹

Richard N. Hey also wrote concerning decision making.

Some critics of current efforts to introduce sex education into academic and religious curricula, raise the question of individual differences in development and experience. Information integrated with experience and understood in the context of one's value system (which is required by the newer conceptualization of sexuality) helps prepare the student for later experiences before involvement with sexual drives becomes

²⁷ Benjamin F. Miller and John J. Burt, Good Health Personal and Community (second edition, Philadelphia and London: W. B. Saunders Company, 1966), pp. 99, 113.

²⁸ Eckert, op. cit., p. 1847.

²⁹ Kirkendall and Calderwood, op. cit., p. 73.

so intense that it distorts the relationship's perspective. The goal of this kind of sex education is responsible and creative decision-making.³⁰

Several writers covered the subject as to how sex education should be taught.

Arthur H. Steinhaus stated:

Readiness of the child is the primary essential; timing is crucial; and guidance with understanding is the most important responsibility of every adult entrusted with leadership of young people.³¹

The pamphlet Sex and Our Society discussed the readiness of junior and senior high school students in a private school.

A private school with a sex education program from nursery through high school found that the keenest interest and response was among seventh graders. High school students who had gone through the program in earlier grades asked mainly about masturbation and premarital sex, and were generally relaxed about the whole subject.³²

H. Henry Southworth wrote concerning sex education in the Paynesville High School:

Family life education is presented to the seniors in social studies because it is a study of the basic and most important unit of society. It is presented on a coeducational basis as a required course.³³

³⁰Hey, op. cit., p. 18.

³¹Arthur H. Steinhaus, "Teaching the Role of Sex in Life," The Journal of School Health, 35:357, October, 1965.

³²Kirkendall and Ogg, op. cit., p. 23.

³³H. Henry Southworth, "Senior High Course Must Highlight Responsible Action," Minnesota Journal of Education, 47:24, December, 1966.

Concerning the question of when sex education should be taught, Arthur H. Steinhaus stated:

It must also be recognized that for many young people formal education ends with high school. Consequently anything that can be taught to assist the high school graduate in wise mate selection, the founding of his own home, and the wise rearing of children, is appropriately included.³⁴

In considering the inclusion of sex education in the college curriculum, Milton I. Levine wrote: "We cannot leave it to the college curriculum for only a small proportion of high school students enter college and in many cases it is already too late."³⁵

When writing about the organization of a sex education program, Milton I. Levine commented:

A good program of sex education in the schools is one where sex instruction is linked with the rest of the school instruction as naturally as possible.

. . . Educators should realize that the teaching of sex education and stable family life is not only the province of the biology and hygiene departments but indeed part of the whole school curriculum.³⁶

When the Minnesota State Board of Education endorsed sex education, they set forth objectives similar to those of SIEC.

³⁴Steinhaus, op. cit., p. 360.

³⁵Levine, op. cit., p. 38.

³⁶Ibid., pp. 35, 36.

1. To provide for the individual in adequate knowledge of his own physical, mental and emotional maturation processes as related to sex.

2. To eliminate fears and anxieties relative to individual sexual development and adjustments.

3. To develop objectives and understanding attitudes towards sex in all of its various manifestations--in the individual and in others.

4. To give individual insight concerning his relationships to members of both sexes and to help him understand his obligations and responsibilities to others.

5. To provide an appreciation of the positive satisfaction that wholesome human relations can bring in both individual and family living.

6. To build an understanding of the need for the moral values that are needed to provide rational basis for making decisions.

7. To provide enough knowledge about the misuses and aberrations of sex to enable the individual to protect himself against exploitation and against injury to his physical and mental health.

8. To provide an incentive to work for a society in which such evils as prostitution and illegitimacy, archaic sex laws, irrational fears of sex, and sexual exploitation are non-existent.

9. To provide the understanding and conditioning that will enable each individual to utilize his sexuality effectively and creatively in his several roles, e.g., as spouse, parent, community member and citizen.³⁷

In studying the community of Winfield, Kansas, as to the development of a sex education program, Lois O. Bear obtained the following information from selected parents.

³⁷"State Board Endorses Sex Education," Minnesota Journal of Education, 47:44, February, 1967.

1. Eighty-two per cent of those answering the questionnaire indicated that they would be willing to plan with the teacher the content of such a course.³⁸

2. Eighty-six and seven-tenths per cent answered "yes" to the question "Do you feel that the high school should offer a course for boys to help them better understand their responsibilities as a parent?"³⁹

3. Eighty-one per cent of the parents' responses were in the affirmative that an explanation of menstruation be explained to boys.⁴⁰

4. Ninety and six-tenths per cent thought that the school should include in the subject, some information about venereal diseases.⁴¹

Kirkendall and Calderwood listed a set of goals that a group of high school students worked out for a sex education program from their own point of view.

1. To provide whatever factual information the individual desires on all aspects of sex.

2. To increase self-understanding so that individuals may become self-confident members of their own sex.

³⁸Bear, op. cit., p. 22.

³⁹Ibid., pp. 23-4.

⁴⁰Ibid., p. 28.

⁴¹Ibid., pp. 31-2.

3. To increase understanding of the opposite sex in order to promote positive relationships between the sexes.

4. To understand better other patterns of sex behavior among peers, within the adult generation, and in other cultures so as to prepare individuals to live with others who believe differently.

5. To open up communication and promote understanding between adults and youth.

6. To develop an appreciation of sex as an integral part of life and see it in the perspective of one's whole life.

7. To allow and enable each individual to develop a personal standard based on understanding of and concern for others.

8. As a continuous process to prepare individuals, mentally and emotionally, for their biological development through maturity.⁴²

The teenagers' goals closely resembled the eight objectives of the Minnesota State Board and the responses received by Lois O. Bear. However, F. R. Wake has stated: "So let's not deceive ourselves: Any sex education program we plan will be in addition to other unplanned influences. . . ."⁴³

In teaching sex education, Arthur H. Steinhaus had listed fourteen recommended principles and practices.

1. Wherever possible this subject matter should be introduced systematically as part of a course dealing with a larger body of knowledge.

⁴²Kirkendall and Calderwood, op. cit., pp. 74-8.

⁴³Wake, op. cit., p. 9.

2. Every person who touches on the subject must feel responsible for the development of appropriate attitudes as well as for the presentation of accurate factual information.
3. Every honest question must be answered honestly and in straight-forward fashion. This does not preclude an answer that ends as follows: 'There is more to this subject but right now and here it does not seem appropriate to discuss it further.'
4. Whenever an adult feels capable of handling the situation, boys and girls should be instructed together. For the encouraging of questions and some instruction in early adolescence, it may sometimes be wise to take advantage of situations in which boys and girls are regularly separated for other reasons, as for physical activities; but this should not be the rule. Students have told the writer that segregated instruction made them wonder what the other sex had been taught. They were given information only about their own sex. This they felt, caused more 'stimulation' than would straight-forward co-educational instruction where everyone received full information.
5. In discussing anatomy and physiology of sex it seems wisest (contrary to usual procedure) to go from the unknown to the known organs, i.e., start with the pituitary or ovary--not with the external organs. Going from the known to the unknown helps to arouse interest and readiness to learn. In the area of sex, such help is unnecessary.
6. In teaching boys, for example, say 'In your mother's body . . .' not 'In a girl's body . . .' This is the principle of the 'halo effect' or 'purity by association.'
7. Show the very broad connotations of sex in personality, family, altruistic endeavor, care of young, etc., purposely to dissipate sex feelings over a large area of experience rather than confine it to a 'private thrill.'
8. At the high school level it is probably unnecessary if not unwise to discuss in detail (1) methods of birth control, (2) venereal disease

prophylaxis, (3) sexual techniques, (4) sexual perversions.

9. Do not seek the special consent of parents to teach in this area, but instead educate parents to what is being taught, and indicate that they are permitted to ask that a child be excused. Greatest success has been attained where parents and educators regularly co-operate, and the home is encouraged to show responsibility.
10. The wisdom of chastity and all that it implies need not be considered a debatable subject any more than monogamy or any other principle of behavior that represents 'the best experience of the human race.' At the same time, loop-holes must be intimated through which one who has made a mistake can be assured that it is possible for him to return to the happier life.
11. For successful teaching in this area, good personal adjustment is a more important asset to teacher than full knowledge of subject matter. Where the teacher lacks knowledge, it is always good practice for pupils and teacher to search together in available sources.
12. Whenever it is expected that responsibility will be shared by several courses or different instructors, plans must be made to avoid gaps as well as undue repetition. Everybody's business tends to become nobody's business.
13. Every possible means must be enlisted to secure desirable sex conduct, fear of pregnancy, fear of ostracism, or fear of an unhappy future as factors in motivation. Those who decry the use of fear confuse blind fear with enlightened fear. Much of man's conduct is guided by a proper fear of consequences.
14. Learn to enlist the idealism of youth and power of the peer group in the cause of higher standards of conduct. The ability to do this is probably the most important quality of the successful teacher of adolescent youth. An interesting approach is to ask each pupil to write, anonymously, the personality and character qualities that he would like to find in his life

partner. After doing this the class will probably be ready for a panel or symposium type of open discussion in which an equal number of boys and girls address themselves to such sub-topics as (a) What makes a good date good, (b) What kind of sex conduct is best for young people, (c) What kind of a boy or girl would you want to marry, etc., etc. They will suggest other topics. Young people can readily be made to see that in the conduct they expect of each other, they are actually developing the standards of their own generation--the generation with which they must pass through life. Faced with this realization, they will disclose a high level of idealism. This idealism the teacher must learn to utilize fully as an educational force. Without it, hopes for the future would indeed be dim.⁴⁴

Concerned with the teaching of sex education, Albert Ellis wrote:

Once again: our children are virtually never taught that playing baseball is a worthy pastime--but that you must not talk about it publicly. Or that reading is an estimable occupation--but that book, hero, and read are nasty four-letter words which you must never say aloud. Or that playing chess is a wonderful sport--providing that you do not play it with your mother, father, sister, brother, other blood relations, any member of your own sex, and all but one single member of the other sex in your entire lifetime. Yet, while smugly assuring our youngsters that coitus is the finest and most beautiful thing in the world, we seriously caution them not to engage in, speak about, or even privately think about it--except, perhaps, on any Fourth of July that happens to fall on Monday of a leap year. And then we wonder why, as adolescents and adults, they happen to have numberless sex problems!⁴⁵

⁴⁴Steinhaus, op. cit., pp. 361-2.

⁴⁵Albert Ellis, Sex Without Guilt (New York: Lyle Stuart, 1958, 1966), p. 135.

After reviewing literature about sex education programs and teaching practices, a review was launched into what various writers thought was the best type of teacher for imparting sex education to students.

The following paragraph was taken from the article "State Board Endorses Sex Education."

Undoubtedly, the most significant factor in the success of a family life and sex education program is the teacher. Effective instruction requires open, frank discussion with the opportunity to express divergent views. This suggests a teacher who can empathize with children, one with whom children feel free to raise and react to problems with some assurance that their position will be respected.⁴⁶

Kirkendall and Calderwood stated:

It is clear that we will not provide youth with the best teachers if the criterion is solely which teacher has a free period or has joined the faculty most recently, or if we assume that teaching one of the subjects traditionally associated with sex education (health, physical education, science, or home economics) automatically assures competence in this area. Neither do sex or marital status have much relevance.⁴⁷

F. R. Wake noted: "A teacher forced to 'teach sex' may do more harm to the sexual development of his charges than may the reluctant math teacher to their progress in his subject."⁴⁸

⁴⁶"State Board Endorses Sex Education," op. cit., p. 45.

⁴⁷Kirkendall and Calderwood, op. cit., p. 74.

⁴⁸Wake, op. cit., p. 9.

Milton I. Levine made the following statement concerning capable teachers.

Now, it is obvious that . . . there be skillful teachers, not only academically but psychologically and emotionally prepared to handle the subject. At the present time, a primary problem is to find capable teachers--not necessarily health education or biology teachers, but teachers who are well adjusted and mature personalities and are not inhibited or blocked by their own feelings.⁴⁹

In acknowledgment of the child's ability to pick up attitudes, Steinhaus wrote that "The adult who is himself free from unnecessary feelings of shame and embarrassment will not find them in the child and what is more important, will not impart them to the child."⁵⁰ F. R. Wake also wrote concerning the aforementioned that:

The teacher who would impart sex information must himself have mastered the facts and be able to present them calmly and reasonably. Whether deliberately or not, he is also bound to transmit some of his own values and attitudes. In most instances, these will be the attitudes and values generally accepted by society.⁵¹

The previously reviewed problems gave some knowledge as to why Mary S. Calderone wrote of an adult group studying the feasibility of sex education in their community:

The group of adults agreed that it was understandable for teachers to be reluctant to discuss sex

⁴⁹Levine, op. cit., p. 35.

⁵⁰Steinhaus, op. cit., p. 357.

⁵¹Wake, op. cit., p. 10.

attitudes in their classes, since they and the people of the community generally needed a mutual understanding of the problems involved and a mutual desire to solve them.⁵²

In her study of parent attitudes, Bear found that 80 per cent of the parents indicated that the teacher should give a tactful but truthful answer concerning sex at the time the question was asked.⁵³ However, the Hegelers stated in their book:

So when we talk about being openminded and natural, we must face the fact that none of us can ever acquire an open mind or be capable of behaving entirely as in nature. The most we can develop is a slightly more open mind, freed from the worst of the injunctions received during a strict upbringing. We can become slightly more tolerant--partly towards ourselves, partly towards others, and partly towards the society in which we live.⁵⁴

The Russells, in their investigations of human behavior, wrote:

To function intelligently mean in practice exactly the same thing as to enjoy life to the utmost--and in particular, as we shall see, there is a specially close and positive relation between intelligence and sexual enjoyment.⁵⁵

Kirkendall and Ogg summed up the situation when they wrote the following:

⁵²Calderone, op. cit., p. 27.

⁵³Bear, op. cit., p. 26.

⁵⁴Inge and Stan Hegeler, An ABZ of Love, trans. David Hohnen (New York: Medical Press of New York, 1963), p. 73.

⁵⁵Claire Russell and W. M. S. Russell, Human Behaviour (Boston: Little, Brown and Company, 1961), pp. 28-9.

No human society has held that the sex drive required no controls. But few have been as ambiguous and ostrich-like about it as ours. Sex denied or pursued for selfish ends breeds emptiness and frustration, which can set the stage for aggression. It is time to lift our heads from the sand and use them--and our hearts as well--to develop a healthy, constructive role for sexual energy throughout lives. Sex will, of course, retain its private, personal meaning, but the way we approach it through legislation, population control, education, community institutions, and mass media will be crucial in the years to come. This is one of the most urgent challenges facing our society today.⁵⁶

⁵⁶Kirkendall and Ogg, op. cit., p. 27.

II. THE GROUPS STUDIED AND MATERIALS AND METHODS USED

Groups Studied

To establish a means of comparison for the Animal Life Reproduction lessons being taught at Silver Lake High School, another group was located at Frankfort High School.

Both groups studied were sophomore vocational agriculture students consisting of nine boys each.

The control group was in the community of Frankfort, Kansas which had a population of 1,106. Enrollment of the high school was 159. The nearest cities of any size were Manhattan, Kansas and Beatrice, Nebraska which were about 60 miles distant. The members of the control group were assigned numbers 12 through 20 by the Frankfort vocational agriculture instructor, Ed Ross.

The experimental group was in the community of Silver Lake, Kansas which had a population of 400. Enrollment of the high school was 150. The nearest city of any size was Topeka, Kansas which was about 11 miles distant. They were assigned numbers 11, 22, 33, 44, 55, 66, 77, 88, and 99 by the Silver Lake vocational agriculture instructor, Harold Loomis.

The members of each group were given numbers because it was felt that a truer response might be given if the students felt some degree of privacy.

Teaching Methods and Materials Used

An outline of both teaching methods used in this study has been included to show the main differences between the presentations to the control and the experimental groups. Ed Ross, vocational agriculture instructor at Frankfort, presented the livestock reproduction information to the control group in four lessons. The vocational agriculture instructor at Silver Lake, Harold Loomis, presented the livestock and human sex education information to the experimental group in a series of nine lessons. A parallel presentation of the lessons, presented by the two instructors to their students, has been used in this study to show how the methods contrasted.

The basic text used by both groups was Dairy Cattle Sterility.⁵⁷ The text was in booklet form and covered the reproductive anatomy of both sexes of cattle, the production of both sperm and eggs, the influences of hormones, the development of the fetus, conception control, feeding for fertility, venereal diseases, artificial insemination, and birth.

The instructional outlines and procedures used in the teaching of both groups were as follows:

⁵⁷Louis J. Boyd and Harold D. Hafs, Dairy Cattle Sterility (Port Atkinson: W. D. Hoard and Sons Company, 1964).

Control Group	Experimental Group
A. Pre-test given concerning human reproduction.	A. Pre-test given concerning human reproduction, then the following instructions were given: (1) The terms to be used while studying and discussing the reproduction information were those used in the text, not "gutter words." (2) That each student should check out the book <u>Love, Sex and the Teenager</u> ⁵⁸ from the Topeka Public Library and read it in conjunction with their parents.
Lesson one:	Lesson one:
1. Introduction of livestock reproduction.	1. Studied the first two chapters of the text.
2. Definition of terms commonly used in the text.	2. Discussed: a. Definition of terms used in the text. b. Location of the various bull reproductive organs. c. Anatomy of a sperm cell. d. Causes of reproductive problems in bulls. e. Possible analogies that can be made concerning man.
Lesson two:	Lesson two:
Students studied the first part of the text covering reproduction.	1. Studied the third and fourth chapters of the text.
	2. Discussed: a. Definition of the terms used.

⁵⁸Lorand, op. cit.

<u>Control Group</u>	<u>Experimental Group</u>
	b. Location of the various cow reproductive organs.
	c. Purposes of the reproductive organs and their parts.
	d. Hormones secreted, their cycles of production, and the effects they have upon the body of the cow.
	e. Possible analogies that can be made concerning the woman.
	3. Discussed the presence of blood following estrus in cows and the function of menstruation in the woman.
Lesson three:	Lesson three:
Students studied the remainder of the reproduction text.	1. Studied the fifth and sixth chapters of the text and the article "The 40% Pig Loss You Never See." ⁵⁹
	2. Discussed:
	a. Terms used in the text.
	b. Rate and number of ova that can be produced by cattle, swine, and women.
	c. Animal embryonic and fetal development, how it is protected and nourished.

Control Group	Experimental Group
	d. Human embryo development as shown in the book <u>Growth</u> ⁶⁰ and their similarities to animal embryos.
Lesson four:	Lesson four:
1. Explanation and question session.	1. Students studied the seventh chapter of the text and the slides <u>Recovery of the Uterus After Calving</u> . ⁶¹
2. Keith Beeman, D.V.M., was used as a source person during the session.	2. Discussed:
	a. The age and weight at which animals should be bred for best results.
	b. The best time to breed animals during estrus.
	c. Various analogies that are drawn about women.
B. Post-test given concerning human reproduction.	Lesson five:
	1. Students studied the eighth through the tenth chapters of the text.
	2. Discussed:
	a. Effects of under- and over-feeding upon fertility.
	b. Effects of vitamins and minerals upon reproduction.
	c. Inherited abnormalities.

⁶⁰James M. Tanner and Gordon R. Taylor, et al. Growth (New York: Time Incorporated, 1965).

⁶¹N. L. Van Denmark, Recovery of the Uterus After Calving (Port Atkinson: NASCO).

Control Group	Experimental Group
:	:
:	d. Types of twins and
:	reason why some are
:	sterile.
:	:
:	e. Possible analogies that
:	can be made concerning
:	humans.
:	:
:	f. Diseases of livestock
:	reproduction.
:	:
:	Lesson six:
:	1. Viewed the films <u>Quarter</u>
:	<u>Million Teenagers</u> ⁶² and <u>The</u>
:	<u>Innocent Party</u> . ⁶³
:	:
:	2. Discussed the problem of
:	human venereal diseases.
:	One of the boys said, "We
:	laughed at the presentations
:	we saw in the films shown
:	during grade school because
:	we really did not know why
:	they were being shown. These
:	films are almost enough to
:	scare you into leaving girls
:	alone forever because we
:	understand it now." ⁶⁴
:	:
:	Lesson seven:
:	1. Students studied the eleventh
:	chapter of the text.
:	:
:	2. Discussed:
:	a. Artificial insemination
:	and called upon the boys
:	who observed the demon-
:	strations given at the
:	:

⁶²Los Angeles Health Department, Quarter Million Teenagers (Los Angeles: Los Angeles Health Department, 1964).

⁶³Kansas State Health Department, The Innocent Party (Topeka: Kansas State Health Department, 1959).

⁶⁴Boy number 88 of the experimental group.

Control Group	Experimental Group
:	:
:	:
:	Kansas Artificial Breed-
:	ing Service Unit barn
:	during Ag Science Day of
:	previous year to help
:	relate the information
:	concerning the lesson.
:	:
:	b. Checking for pregnancy
:	and sterility.
:	:
:	c. The history and prac-
:	tice of the aforemen-
:	tioned topics in rela-
:	tion to women.
:	:
:	Lesson eight:
:	1. Students studied the twelfth
:	chapter of the text and then
:	viewed the film <u>S.P.F.</u>
:	<u>Movie</u> . ⁶⁵
:	:
:	2. Discussed:
:	a. Length of gestation of
:	various animals and
:	their prolificacy.
:	:
:	b. Symptoms of birth and
:	birth positions of the
:	unborn.
:	:
:	c. Types of birth and the
:	expulsion of afterbirth.
:	:
:	Lesson nine:
:	1. A tape recording which the
:	writer made from an article
:	"The Romantic Complex" ⁶⁶ was
:	played.
:	:

⁶⁵S.P.F. Movie (Columbus, Missouri: Behlem Manufacturing Company).

⁶⁶Paul Popenoe, "The Romantic Complex," Family Life Magazine, 23:1-4, March, 1963.

<u>Control Group</u>	<u>Experimental Group</u>
:	:
:	2. At the opening of the discussion, one boy remarked
:	:"That guy doesn't believe in
:	any kind of love," ⁶⁷ which
:	caused most of the other
:	students to express their
:	ideas about love and how the
:	taped article contrasted the
:	absurdity of the romantic
:	love to a more productive
:	love.
:	:
:	3. Presented a multiple road
:	lesson concerning and titled
:	"Harry, I'm Pregnant," ⁶⁸ and
:	what avenues a boy could
:	take when faced with the
:	above statement rather than
:	the hysterical reaction of
:	running away, killing, or
:	suicide.
:	:
:	B. Post-test given concerning
:	human reproduction.
:	:

Design of Questionnaire Used

The questionnaire was designed to aid the investigator in locating some of the areas in which students drew false analogies of human sexuality when they had studied reproduction in vocational agriculture or if they had the false ideas before the study of reproduction.

Family Life Publications, Inc. was contacted by the writer for information they had in regard to false sex ideas

⁶⁷Boy number 77 of the experimental group.

⁶⁸Appendix B.

of adolescence. They were very helpful by supplying the writer with two different tests and manuals that they use with high school students. Several questions were taken from these tests to be included in the questionnaire designed for this study.

David Holland and Steve Bollman, Assistant Professors of Family and Child Development, and Miss Katherine Geyer, Professor of Physical Education, helped the writer in the development, and suggested questions for the questionnaire. The final design of the questionnaire was checked and approved by Miss Katherine Geyer and Steve Bollman, as presentable to high school students.

The questionnaire⁶⁹ was given both as a pre-test and a post-test to the study of reproduction for both groups. The questionnaire was devised with both multiple and true-false responses. The first four questions had no bearing on the study. They were included at the beginning of the questionnaire merely to get the students oriented in their thinking about responses to the test questions. The remaining eleven questions were those selected to help the investigator determine some of the areas in which students draw false analogies when studying livestock reproduction, and whether the Animal Life Reproduction lessons kept the false analogies from developing.

⁶⁹Appendix A.

III. THE QUESTIONNAIRE AND RESULTS OBTAINED

The fifth question was included in the questionnaire because, upon moving near the city of Topeka, the writer heard a few of the married women make statements that they thought "French Kissing" would cause pregnancy. They also said that it was not until they were in their late teens or their twenties that they learned otherwise. The investigator decided to find out if teenaged boys had these same misconceptions and if living near a large city versus being farther from a large city would have any influence upon the students' thinking.

The question and its responses were as follows:

5. Intimacies between the human male and female known as "French Kissing" will

- ☐ A. cause cancer
- ☐ B. result in some type of an emotional reaction
- ☐ C. develop an itching rash
- ☐ D. result in pregnancy
- ☐ E. cause intense guilt feelings

The response desired was "B." Of the control group, one student made the desired response both times. Six made the wrong response first and the desired response later. One student made a wrong response and changed to a different wrong response, while another student made the same wrong response on both the pre- and post-tests. The distribution of the control group responses were as shown in Figure 1.

One student of the experimental group made the desired response both times. One student made the desired response and then changed to a wrong response on the post-test. Six students of the experimental group made wrong responses, then changed to the desired response. One student made a different wrong response on both tests. The experimental group's response was as shown in the bar graph of Figure 2.

The experimental group, which was located near Topeka, Kansas, had twice as many students indicating on their tests that "French Kissing" would cause pregnancy than the control group prior to studying reproduction. Neither group indicated this as a response upon taking the post-test.

Question six concerning the pre-ejaculation fluid containing sperm was taken from The Sex Knowledge Inventory Form X.⁷⁰ The question tests mainly for ignorance of fact; that the pre-coital secretions of the male do not usually contain sperm, but there were exceptions to this statement. This question was included to determine if the students realized that pregnancy could take place whenever there were sex relations even if the male did not reach a climax.

Question six and the choice of responses were as follows:

⁷⁰Gelolo McHugh, Sex Knowledge Inventory Form X (Durham, North Carolina: Family Life Publications, Inc., 1950), p. 6.

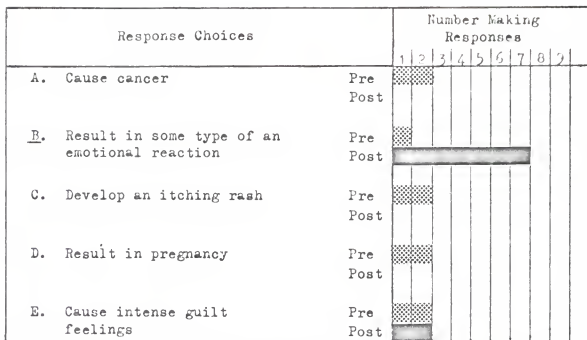


Figure 1. Responses of the control group to the statement concerning "French Kissing"

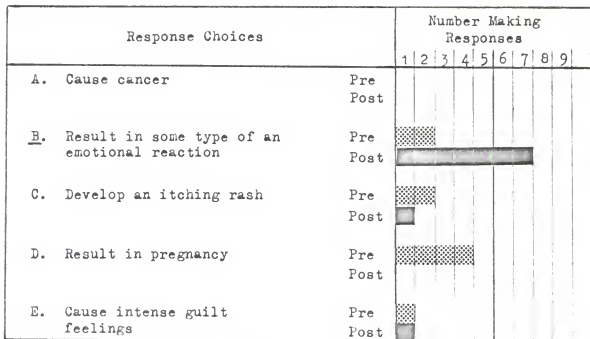


Figure 2. Responses of the experimental group to the statement concerning "French Kissing."

6. When does the fluid produced by the male before ejaculation contain sperm?

- ☐ A. It always contains sperm.
- ☐ B. It may contain sperm at times.
- ☐ C. It never contains sperm.
- ☐ D. It will contain sperm if excitement is caused by contact with a female.
- ☐ E. It cannot be satisfactorily examined to prove that it contains sperm.

The correct response was "B." Of the control group, two students made the correct response and changed to a wrong response on the post-test. One student made a wrong response on the pre-test and then the right response. Three students of the control group made a wrong response and changed to a wrong response, while three other students made the same wrong response. The control group response distribution was as shown in Figure 3.

Two students of the experimental group made the correct response on the pre-test, then changed to a wrong response. Three students made a wrong response first, then changed to the right response on the post-test. Two students made a different wrong choice each time while two others made the same wrong choices on the post-test. The response distribution of the experimental group concerning this question was as shown in Figure 4.

All but one student of the control group believed at the close of the study that the fluid produced before ejaculation would always contain sperm, as indicated by the

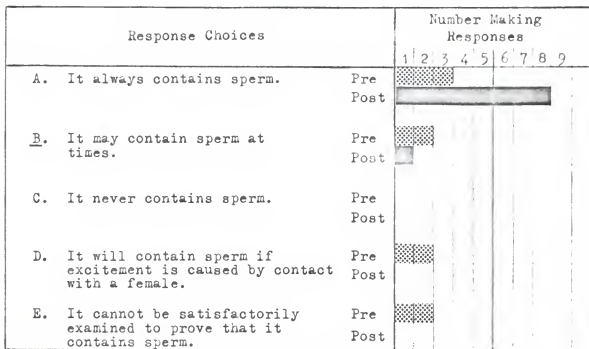


Figure 3. Responses of the control group to the question concerning the fluid produced before ejaculation containing sperm.

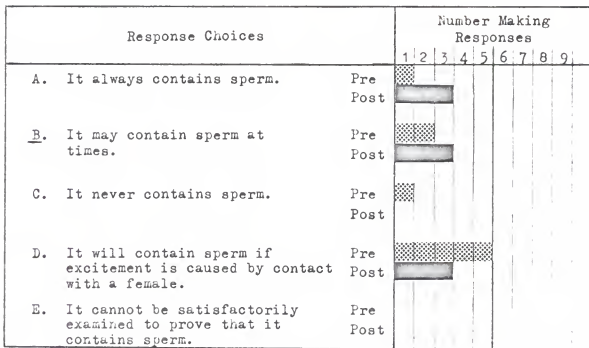


Figure 4. Responses of the experimental group to the question concerning the fluid produced before ejaculation containing sperm.

post-test. The experimental group also believed that it contained sperm but differed among themselves (33 per cent for each selected choice) as to the amount and why, as indicated by their post-tests.

Question seven concerning the number of ova maturing in the human female each month was taken from The Sex Knowledge Inventory Form X.⁷¹ It was placed in the questionnaire to determine if the students had any false ideas concerning the number of ova produced per month in the human female, and if they formed any false analogies when studying reproduction of swine and other prolific animals.

The question and its selected responses were as follows:

7. How many ova usually mature in the human female each month?

- ☐ A. One
- ☐ B. Two
- ☐ C. Several, five to ten
- ☐ D. As many as one hundred
- ☐ E. Several hundred

The correct response was "A." Of the control group, one student made the correct response on both the pre- and post-tests. Seven students made a wrong response first, then made the correct response on the post-test. One student of the control group made two different wrong responses.

⁷¹Ibid.

The response distribution of the control group for question seven is as shown in Figure 5.

Three students of the experimental group made the correct response on each test. Five students made a wrong choice on the pre-test, then changed to the right response on the post-test. One student made a different wrong response on each test. The experimental group's response distribution is as shown in Figure 6.

Neither group was sure just how many ova were produced in the human female upon taking the pre-test. After studying reproduction, all of the students but one from each group responded with the correct choice.

Question eight, concerning the number of sperm cells that fertilize a female cell, was also taken from The Sex Knowledge Inventory.⁷² This question was placed in the questionnaire to see if the students understood that it takes only one sperm to fertilize an egg; not all two to six hundred million per ejaculation.

The question, as written in the questionnaire, and its responses are as follows:

8. How many male sperm cells fertilize a female cell?

- ☐ A. One
- ☐ B. Two
- ☐ C. Five to ten
- ☐ D. Hundreds
- ☐ E. Thousands

⁷²Ibid.

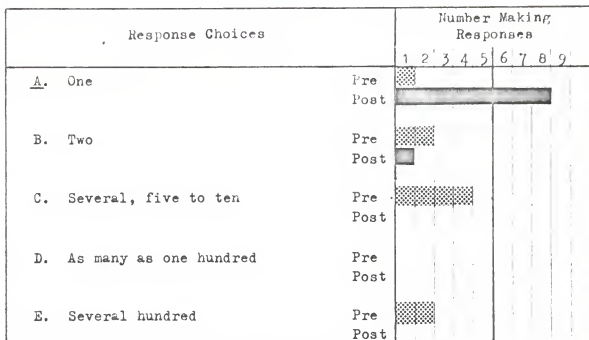


Figure 5. Responses of the control group to the question concerning the number of ova produced in the human female per month.

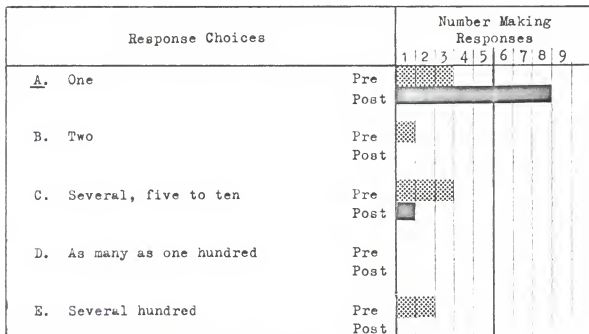


Figure 6. Responses of the experimental group to the question concerning the number of ova produced in the human female per month.

The correct response was "A." Six students of the control group made the correct response both times. Three made a wrong response first, then changed to the correct response on the post-test. The distribution of the responses of the control group to this question is as shown in Figure 7.

Of the experimental group, five students made the correct response both times. Three students made a wrong response on the pre-test, then changed to the correct response. One student of the experimental group made the same wrong response each time he took the test. The experimental group's response distribution to the number of sperm fertilizing an ova is as shown in Figure 8.

No reliable difference was indicated between the two groups on either the pre- or post-test concerning the number of sperm that can fertilize an ova.

The ninth question on the questionnaire was taken from The Sex Knowledge Inventory.⁷³ This question was placed in the questionnaire to find out if any transfer of learning had taken place from the knowledge that it most usually only takes one service to make the cow pregnant to the understanding that the sperm from the first intercourse with the human female may cause pregnancy also.

The question and its selected responses were as follows:

⁷³Ibid.

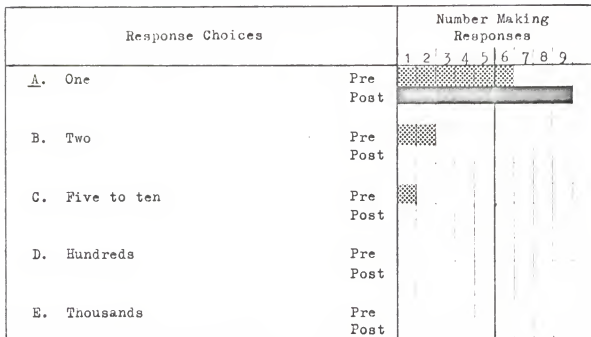


Figure 7. Responses of the control group to the question concerning the number of sperm that can fertilize an ova.

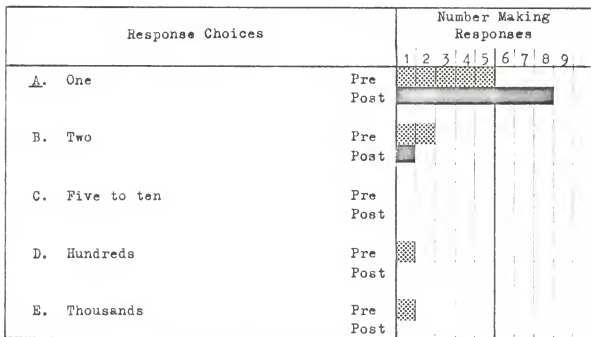


Figure 8. Responses of the experimental group to the question concerning the number of sperm that can fertilize an ova.

9. How many times is it necessary for a female to be served for pregnancy to be possible?

- ☐ A. Many times if the female is not passionate
- ☐ B. Many times unless the male is very passionate
- ☐ C. Once
- ☐ D. Many times
- ☐ E. Once if the female is very passionate

The correct response was "C." Of the control group, two students made the correct response both times. Six students made the wrong response on the pre-test, then changed to the correct response on the post-test. One student of the control group made a different wrong response on each test. The response distribution of the control group to the number of services needed to cause pregnancy in the female is shown in Figure 9.

One student of the experimental group made the correct response on each test. Six students made a wrong response first, then changed to the correct response on the post-test. Two students of the experimental group chose different wrong responses on each test. The distribution of the experimental group's responses to the number of services needed to cause pregnancy is as shown in Figure 10.

The results, as indicated on the pre- and post-tests, show no significant difference between the two groups of students.

The question concerning the time lapse, after giving birth to before the female can become pregnant again, was

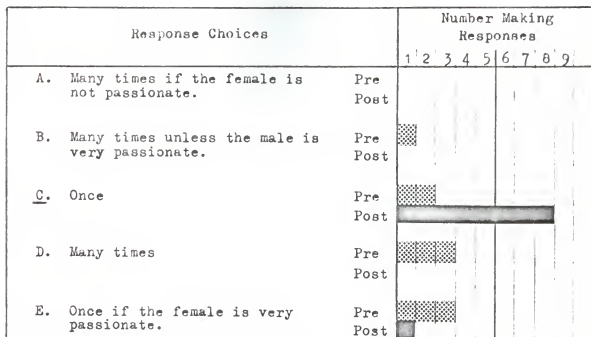


Figure 9. Responses of the control group to the question concerning number of services needed to cause pregnancy.

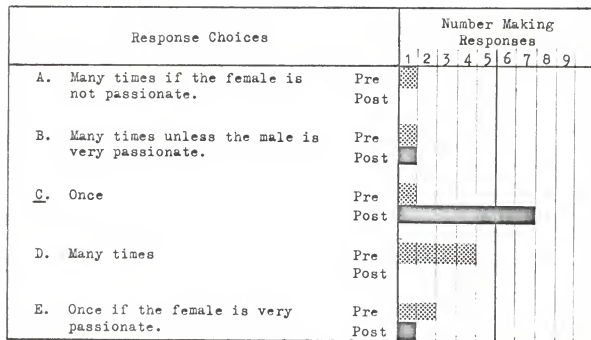


Figure 10. Responses of the experimental group to the question concerning number of services needed to cause pregnancy.

taken from The Sex Knowledge Inventory.⁷⁴ This question was placed in the questionnaire to determine if the students realized that a female can become pregnant any time there is an ova in her reproductive organs to be fertilized. Also, that the ova has been in the uterus for some time before she menstruates.

The question, as written in the questionnaire, and its responses are as follows:

10. How soon after the birth of her baby is it possible for a human female to become pregnant again?

- ☐ A. Before she menstruates
- ☐ B. After she menstruates
- ☐ C. Not until after she stops breast feeding her baby
- ☐ D. Not until she stops breast feeding her baby
- ☐ E. Not until she feels sex desire

The correct response was "A." Three students of the control group made the correct response on each test. One student made a wrong response on the pre-test, then changed to the correct response. Three students made a wrong response and changed to a different wrong response on the post-test. Two students of the control group made the same wrong response on both tests. The response distribution of the control group concerning time lapse after giving birth before female can become pregnant again was as shown in Figure 11.

Of the experimental group, one student made a wrong

⁷⁴Ibid.

response on the pre-test, then changed to the correct response on the post-test. Five students made a different wrong response on both tests. Three students of the experimental group made the same wrong response on both tests. The experimental group's response distribution to time lapse after giving birth before the female can become pregnant again is as shown in Figure 12.

Of the control group, 44 per cent of the students realized that the female could get pregnant before menstruation because of carrying an ova, while only 11 per cent of the experimental group realized that an ova had to be present before menstruation would take place.

While the writer was reviewing literature, he came across this information, contained in Love, Sex and the Teenager:

. . . If his mother is frighteningly aggressive and threatening in her behaviour, the little boy will attribute aggressiveness to her whole body. Her angry mouth will be associated unconsciously in his mind with her genital, and he may thus develop fears of contact with the female sex organ, believing it to be a dangerous place equipped with a sharp set of teeth. An intense fear of being castrated by the vagina itself is often found to be an important factor in the combination of causes leading to homosexuality in a man and to impotence. . . .⁷⁵

This information was then written into the form of a question and placed in the questionnaire to find out if any

⁷⁵Lorand, op. cit., pp. 46-47.

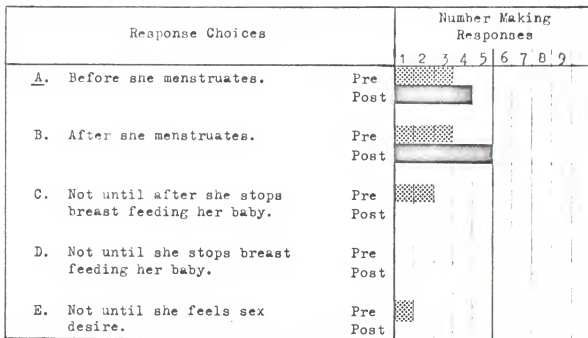


Figure 11. Responses of the control group to the question concerning timelapse after giving birth before female can become pregnant again.

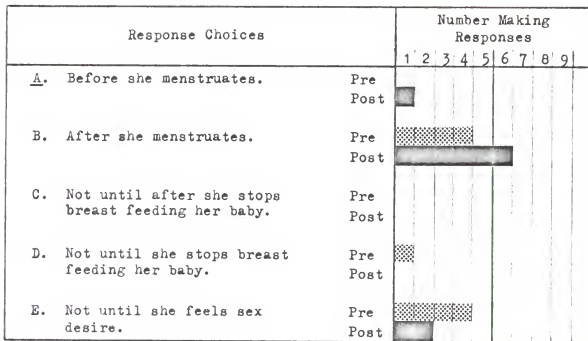


Figure 12. Responses of the experimental group to the question concerning timelapse after giving birth before female can become pregnant again.

of the students had the same misconception. It was hoped that the teaching of sex education, along with livestock reproduction, would eliminate this false idea about the vagina and that the post-test would or would not verify it.

In a further review of literature, the writer found the following statement by Gavin Arthur concerning homosexuals.

He . . . doesn't trust the world of women. He feels that, sexually, women are traps. They have, as it were, teeth in the vagina. They are out to get you and tie you down in exchange for sexual favors ⁷⁶

Dr. Fretag, who uses hypnotherapy by having the patients see their unconscious body image while under hypnosis and reach an understanding of it while correcting the subconsciously formed image, wrote of a case history in which a patient with latent homosexuality described his subconscious body image as having a snare or bear trap locked onto the penis.⁷⁷

The question and its responses, as written in the questionnaire, are as follows:

11. The vagina contains sharp hook-like or little teeth-like projections.

- ☐ A. True
☐ B. False

⁷⁶Gavin Arthur, The Circle of Sex (New York: University Books Inc., 1966), p. 10.

⁷⁷Fredericka F. Freytag, Hypnosis and the Body Image (New York: The Julian Press, Inc. Publishers, 1961), pp. 125-29.

The correct response was "B." Seven students of the control group made the correct response, then changed to the wrong response. Two students made the same wrong response on both the pre- and post-tests. The control group's response distribution is as shown in Figure 13.

Two members of the experimental group made the correct response on both tests. Two students made the correct response, then changed to a wrong response on the post-test. Five students of the experimental group made the wrong response on the pre-test, then changed to the correct response on the post-test. The distribution of the responses of the experimental group is as shown in Figure 14.

Only two students of the experimental group finished the study, believing that the vagina contained sharp, gripping projections; whereas, all of the control group ended the study believing this to be true. At the beginning of the study, however, only two students of the control group, as compared to five of the experimental group, made the latent homosexuality choice.

The twelfth question of the questionnaire concerning the location of the reproductive tract was used because the investigator felt that this could also be an area in which a false conception might be drawn by students. The investigator thought that students could become confused as to the location of the reproductive tract in the human female, from

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
A. True	Pre	■	■							
	Post	■	■	■	■	■	■	■	■	■
<u>B. False</u>	Pre	■	■	■	■	■	■	■		
	Post									

Figure 13. Responses of the control group to the statement concerning the vagina containing sharp projections.

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
A. True	Pre	■	■	■	■	■				
	Post	■	■							
<u>B. False</u>	Pre	■	■	■	■	■				
	Post	■	■	■	■	■	■	■	■	■

Figure 14. Responses of the experimental group to the statement concerning the vagina containing sharp projections.

observing illustrations made of cattle and the location of their internal organs, due to the difference in the way cattle and humans stand.

The question and choice of responses are as follows:

12. The reproductive canal is between the urinary canal and the anus.

- ☐ A. True
☐ B. False

The correct response was "A." Of the control group, seven students made the correct response on the pre-test, then changed to the wrong response. Two students made the same wrong response on both tests. The distribution of the control group's responses to the location of the reproductive canal is as shown in Figure 15.

In the experimental group, three students made the correct response on both tests. Five students made the right response on the pre-test and the wrong response on the post-test. One student of the experimental group made the same wrong response on both tests. The distribution of the responses of the experimental group concerning the location of the reproductive canal is as shown in Figure 16.

There was no significant difference between the two groups, as indicated by the pre-test responses. At the close of the study, all of the control group thought that the reproductive canal was not located between the urinary canal and the anus; whereas, 66 per cent of the experimental group made the same false conception.

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
<u>A.</u> True	Pre	■	■	■	■	■	■	■		
	Post									
B. False	Pre	■								
	Post	■	■	■	■	■	■	■	■	■

Figure 15. Responses of the control group to the statement concerning the location of the reproductive canal between the anus and urethra.

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
<u>A.</u> True	Pre	■	■	■	■	■	■	■		
	Post	■	■	■	■	■	■	■	■	■
B. False	Pre	■								
	Post	■	■	■	■	■	■	■	■	■

Figure 16. Responses of the experimental group to the statement concerning the location of the reproductive canal between the anus and urethra.

The question concerning the human female having estrus symptoms like those of livestock was placed in the questionnaire because, in past teaching experience, the writer has had this question asked by students every time the lessons over livestock reproduction were taught.

The question and the choice of responses are as follows:

13. The human female has estrus or heat symptoms like the female livestock.

- ☐ A. True
☐ B. False

The desired response was "B." Three students of the control group made the desired response on each test. Five students made the undesired response on the post-test. One student gave the same undesired response on both tests. The distribution of responses of the control group concerning estrus symptoms is as shown in Figure 17.

Of the experimental group, one student made the desired response on both tests. One student made the desired response on the pre-test, then changed to the undesired response. One student made the undesired response first, then changed to the desired response on the post-test. Six students of the experimental group made the same undesired response on both tests. The experimental group's distribution of responses is as shown in Figure 18 concerning estrus symptoms.

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
A. True	Pre									
	Post									
<u>B.</u> False	Pre									
	Post									

Figure 17. Responses of the control group to the statement concerning livestock estrus symptoms in the woman.

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
A. True	Pre									
	Post									
<u>B.</u> False	Pre									
	Post									

Figure 18. Responses of the experimental group to the statement concerning livestock estrus symptoms in the woman.

There was no significant difference between the two groups, as indicated by the pre-test at the beginning of the study. At the end of the study, all but one student of the control group had changed to the desired response; whereas, the distribution of responses for the experimental group remained the same.

The question concerning whether the human female will or will not accept reproductive acts during certain periods was placed in the questionnaire to see if there was a possible chance of students making false analogies concerning the human female from the study of livestock reproduction.

The question and choice of responses are as follows:

14. The female livestock will not accept the male livestock between heat periods or during pregnancy for reproductive acts. The same is true for the human female.

- ☐ A. True
☐ B. False

The correct response was "B." Four students of the control group made the correct response on both tests. Five students made the wrong response on the pre-test, then changed to the correct response on the post-test. The distribution of the control group's responses to the question concerning reception of reproductive acts is shown in Figure 19.

In the experimental group, seven students made the correct response on both tests. One student made the correct response on the pre-test, then changed to a wrong response.

One student made a wrong response first, then changed to the correct response on the post-test. The experimental group's distribution of responses to the question concerning acceptance of reproductive acts at certain times is as shown in Figure 20.

The control group was divided in their beliefs, while all but one student of the experimental group believed the human female's reception of the male did not depend upon estrus periods or pregnancy, as indicated by the pre-tests. At the end of the study, all students of the control group believed that the female's reception of the male could be due to factors other than estrus periods or pregnancy. The experimental group's responses remained the same at the end of the study as was indicated at the beginning of the study.

The last question of the questionnaire concerning menstruation being a mysterious occurrence of the female was used in the questionnaire to determine if the students knew why menstruation occurred. It was taken from "Form X"⁷⁸ and the information contained in Bear's study.⁷⁹

The question and the choice of responses are as follows:

⁷⁸Gelolo McHugh, op. cit., p. 4.

⁷⁹Bear, op. cit., p. 28.

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
A. True	Pre									
	Post									
<u>B. False</u>	Pre									
	Post									

Figure 19. Responses of the control group to the statement concerning the female's reception of the male between heat periods or during pregnancy.

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
A. True	Pre									
	Post									
<u>B. False</u>	Pre									
	Post									

Figure 20. Responses of the experimental group to the statement concerning the female's reception of the male between heat periods or during pregnancy.

15. Menstruation is a mysterious occurrence of which nothing is known except that the female discharges blood at this time.

- ☐ A. True
☐ B. False

The correct response was "B." Six students of the control group made the correct response on both tests. Three students made the wrong response on the pre-test, then changed to the correct response on the post-test. The distribution of responses of the control group to menstruation being a mysterious occurrence, is as shown in Figure 21.

In the experimental group, three students gave the correct response on both tests. Three students gave the wrong response on the pre-test, then changed to the correct response. Three students made the same wrong response on both pre- and post-tests. The experimental group's distribution of responses to menstruation being a mysterious occurrence is as shown in Figure 22.

As indicated by the pre-test, the control group and the experimental group were just the reverse of each other, with the control group having 33 per cent more students correct. At the close of the study, all members of the control group were correct in their responses; whereas, 33 per cent of the experimental group made the switch to make the experimental group 66 per cent correct in believing that menstruation is not a mysterious occurrence.

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
A. True	Pre									
	Post									
<u>B.</u> False	Pre									
	Post									

Figure 21. Responses of the control group to the statement concerning nothing being known about menstruation.

Response Choices		Number Making Responses								
		1	2	3	4	5	6	7	8	9
A. True	Pre									
	Post									
<u>B.</u> False	Pre									
	Post									

Figure 22. Responses of the experimental group to the statement concerning nothing being known about menstruation.

IV. SUMMARY AND CONCLUSIONS

Summary

This study was developed around the assumption of the investigator that problems could arise from vocational agriculture students making false analogies between livestock and human reproduction. The central question of the study was whether some of the areas could be identified and that the inclusion of sex education material would keep these areas of false analogies between livestock and humans from developing.

Through the review of literature, of questions asked of the investigator during six years of experience in teaching livestock reproduction, and the help of two members of the Kansas State University faculty, a questionnaire was designed to help locate these problem areas.

This questionnaire was given to both the control group and the experimental group, so a comparison could be made which covered areas of human reproduction. Both the control and the experimental groups were composed of nine sophomore boys studying vocational agriculture. The control group was located at Frankfort High School and studied under the guidance of Ed Ross, vocational Agriculture instructor. The experimental group studied under the guidance of Harold Loomis, vocational agriculture instructor at Silver Lake High

School. The control group studied only livestock reproduction while the experimental group studied both livestock and human reproduction. At the end of the study, both groups were again given the same questionnaire, and a comparison of their responses was made to determine any problem areas and if the inclusion of human sex education information helped solve them.

The difference between the control group and the experimental group, as indicated by their pre-test responses, was in five areas. (1) There were 22 per cent more students in the experimental group than in the control group, indicating that "French Kissing" would cause pregnancy. (2) The control group was divided among the responses as to if the pre-ejaculation fluid contained sperm, but 56 per cent of the experimental group indicated that it would contain sperm if excitement was caused by contact with a female. (3) All but two students of the control group indicated that the vagina did not contain sharp projections in it; whereas, 56 per cent of the experimental group indicated that it did. (4) All but one student of the experimental group indicated that the human female was not like livestock in her reception of the male for acts of reproduction at certain times, but 56 per cent of the control group indicated that she was like the livestock in her reception of the male. (5) Of the control group, 67 per cent of the students indicated menstruation

was not a mysterious occurrence while 67 per cent of the experimental group indicated that it was mysterious.

The findings of the post-test indicated a difference between the control group and the experimental group in six areas. (1) All but one student of the control group indicated that the pre-ejaculation fluid would always contain sperm; whereas, the experimental group was more divided among the responses. (2) The control group was divided between whether the human female could become pregnant first, before, or after menstruation following childbirth, but 78 per cent of the experimental group indicated that first pregnancy following childbirth could come only after menstruation. (3) All of the control group and two students from the experimental group indicated that the vagina contained sharp projections. (4) All of the control group and 67 per cent of the experimental group indicated that the reproductive canal was not located between the urinary canal and the anus. (5) All but one student of the control group indicated that the human female did not exhibit estrus symptoms like those of livestock, but 78 per cent of the experimental group still indicated that she did exhibit livestock estrus symptoms. (6) All of the control group indicated that the menstruation was not a mysterious occurrence while 67 per cent of the experimental group indicated that it was not mysterious.

Conclusions

There appeared to the writer to be no great difference between the experimental and the control groups as to correct factual information about human reproduction. Two cases were found in which the correct analogy between human and live-stock reproduction was absent, to be superior in the experimental group which received human reproduction information. In one case, there was a superior analogy between human and livestock reproduction for the control group. In the other eight cases, the analogy was similar between the two groups.

Therefore, the writer drew the following conclusions:

1. There would not be any need for vocational agriculture instructors to teach the human life reproduction lessons if the school system had a sex education course of studies integrated into both the elementary and high schools or if the health courses taught in the high school contained information about sex education.

2. If the school curriculum does not contain any sex education, then it would be of benefit to both the students and the instructor if he would include sex education along with livestock reproduction.

3. The agricultural instructor should keep in mind the following statement: "There is no evidence whatsoever that sex education is harmful, that it excites curiosity or

stimulates sex urges and desires."⁸⁰

This instructor found that when he followed the four cardinal principles as set forth by Dr. Levine: "(1) Always tell the truth, (2) Never put off answering, (3) Use correct terms, (4) Answer as much as the child desires and no more,"⁸¹ the definition for sex education, as used in this study and the preceding quote, would hold true for his students.

⁸⁰Levine, op. cit., p. 31.

⁸¹Ibid., p. 33.

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APPENDICES

APPENDIX A

- ☐ Pre
☐ Post

Number _____

SURVEY OF REPRODUCTIVE KNOWLEDGE

DIRECTIONS: Place an "X" in the square beside the answer that is most nearly correct.

1. The sex of offspring depends upon
 - ☐ A. which ovary the egg comes from
 - ☐ B. the body cells of the mother
 - ☐ C. which sex linked chromosome is contained by the sperm cell which fertilizes the egg
 - ☐ D. the age of the parents
 - ☐ E. the relative vitality of the parents
2. The uterus is part of the
 - ☐ A. male reproductive organs
 - ☐ B. female reproductive organs
 - ☐ C. embryo
 - ☐ D. excretory system
 - ☐ E. urinary system
3. Spermatozoa develop from the
 - ☐ A. cells of the testes
 - ☐ B. fallopian tubes
 - ☐ C. uterus
 - ☐ D. ureter
 - ☐ E. prostate gland
4. The placenta is an organ
 - ☐ A. from which the fetus is nourished
 - ☐ B. in the male reproductive system
 - ☐ C. attached between the stomach and lungs
 - ☐ D. within the embryo
 - ☐ E. permitting fertilization
5. Intimacies between the human male and female known as "French Kissing" will
 - ☐ A. cause cancer
 - ☐ B. result in some type of an emotional reaction
 - ☐ C. develop an itching rash
 - ☐ D. result in pregnancy
 - ☐ E. cause intense guilt feelings
6. When does the fluid produced by the male before ejaculation contain sperm?
 - ☐ A. It always contains sperm.
 - ☐ B. It may contain sperm at times.
 - ☐ C. It never contains sperm.
 - ☐ D. It will contain sperm if excitement is caused by contact with a female.
 - ☐ E. It cannot be satisfactorily examined to prove that it contains sperm.

7. How many ova usually mature in the human female each month ?
☐ A. One
☐ B. Two
☐ C. Several, five to ten
☐ D. As many as one hundred
☐ E. Several hundred
8. How many male sperm cells fertilize a female cell ?
☐ A. One
☐ B. Two
☐ C. Five to ten
☐ D. Hundreds
☐ E. Thousands
9. How many times is it necessary for a female to be served for pregnancy to be possible ?
☐ A. Many times if the female is not passionate
☐ B. Many times unless the male is very passionate
☐ C. Once
☐ D. Many times
☐ E. Once if the female is very passionate
10. How soon after the birth of her baby is it possible for a human female to become pregnant again ?
☐ A. Before she menstruates
☐ B. After she menstruates
☐ C. Not until after she stops breast feeding her baby
☐ D. Not until she stops breast feeding her baby
☐ E. Not until she feels sex desire
11. The vagina contains sharp hook-like or little teeth-like projections.
☐ A. True
☐ B. False
12. The reproductive canal is between the urinary canal and the anus.
☐ A. True
☐ B. False
13. The human female has estrus or heat symptoms like the female livestock.
☐ A. True
☐ B. False
14. The female livestock will not accept the male livestock between heat periods or during pregnancy for reproductive acts. The same is true for the human female.
☐ A. True
☐ B. False
15. Menstruation is a mysterious occurrence of which nothing is known except that the female discharges blood at this time.
☐ A. True
☐ B. False

APPENDIX B

Sophomore boy starts having intimate relations

Two or three months

"Harry, I'm pregnant"

Run away → Kill and/or suicide

HYSTERICS

possible solutions

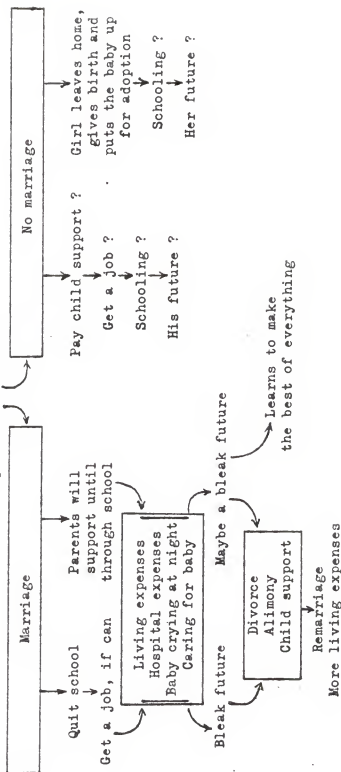


Figure 23. The "Harry, I'm pregnant" lesson as written on the chalk board.

ANALOGIES DEVELOPED FROM METHODS OF TEACHING
REPRODUCTION

by

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B. S., Kansas State University, 1961

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This study was developed around the assumption of the investigator that problems could arise from vocational agriculture students making false analogies between livestock and human reproduction. The central question of the study was whether some of the areas could be identified and that the inclusion of sex education material would keep these areas of false analogies between livestock and humans from developing.

Through the review of literature, of questions asked of the investigator during six years of experience in teaching livestock reproduction, and the help of two members of the Kansas State University faculty, a questionnaire was designed to help locate these problem areas.

This questionnaire was given to both the control group and the experimental group, so a comparison could be made which covered areas of human reproduction. Both the control and the experimental groups were composed of nine sophomore boys studying vocational agriculture. The control group was located at Frankfort High School and studied under the guidance of Ed Ross, vocational agriculture instructor. The experimental group studied under the guidance of Harold Loomis, vocational agriculture instructor at Silver Lake High School. The control group studied only livestock reproduction while the experimental group studied both livestock and human reproduction. At the end of the study, both

groups were again given the same questionnaire, and a comparison of their responses was made to determine any problem areas and if the inclusion of human sex education information helped solve them.

It was found that the questionnaire located two problem areas relating directly to the teaching of livestock reproduction. These were: (1) The students of both groups changed their ideas about the location of the reproductive canal to a false conception of its location, and (2) The students of the experimental group did not change their ideas about the misconception that human females have estrus symptoms like those of livestock to the correct conception as the control group was able to do.

The findings also located two areas which could be corrected if reproduction were explained in a way that would eliminate the students drawing misconceptions in these areas. They were: (1) The students of both groups failed to realize that an ova has to be present before menstruation will occur; therefore, a female could become pregnant before her first menstruation after giving birth to a child; and (2) The vagina does not contain small, sharp, hook-like or teeth-like projections to which the experimental group responded incorrectly at the beginning of the study but not at the end, and the control group responded correctly at the beginning but did not at the end.

Four assumptions were drawn by the investigator from the study. (1) Perhaps the misinterpreted location of the reproductive canal of the human female could be from not fully visualizing the cow's reproductive organ placements in comparison to the human female, due to the difference in the way they stand. (2) The false estrus symptom analogy could possibly be due to the students' desires to find easier ways to intimacies with girls. (3) The idea that the vagina contains sharp projections was either conceived psychologically or from "informed" friends. (4) The inclusion of human sex education information with the livestock reproduction information changed some concepts of the experimental group about human reproduction to more closely compare with the definition of sex education as observed by the investigator.